A2575-8

Reported Fire Losses In The Petroleum Industry For 1981

Statistics Department

OCTOBER 1982

American
Petroleum
Institute

REPORTED FIRE LOSSES IN THE PETROLEUM INDUSTRY—1981

The experience record of 89 companies reporting to the 52nd annual fire loss survey to the American Petroleum Institute indicates a ratio of fire losses to current replacement value in 1981 of 3.3 cents per $100. A current replacement value of $203,396,676,993 was reported for structures, equipment, contents and oil stocks in 1981.

Fire losses of $66,806,106 were reported for the year. The number of fires reported for 1981 totaled 475.

TABLE 1

CURRENT REPLACEMENT VALUES, FIRE LOSSES AND FIRE-LOSS RATIOS, BY CLASSES OF PROPERTY FOR 1981

Classes of Property	Current Replacement Value $	Fire Loss $	Fire-Loss Ratio $/$100
Exploration, Production & Gas Processing	96,729,083,053	27,892,580	0.029
Refining	42,072,542,129	29,535,859	0.070
Marketing	16,246,330,972	3,564,996	0.022
Pipeline	28,776,859,994	1,315,817	0.005
Chemical Operations	14,045,849,000	3,674,631	0.026
Miscellaneous	5,526,011,845	822,223	0.015
All Properties	203,396,676,993	66,806,106	0.033

NOTES: The reporting of fires for 1981 was restricted to those resulting in losses of $2,500 or more.

A list of the companies participating in the survey for 1981 appears on page 6.

REPORTED FIRE LOSSES IN THE PETROLEUM INDUSTRY—1980 (REVISED)[1]

The experience record of 27 companies reporting to the 51st annual fire loss survey to the American Petroleum Institute indicates a ratio of fire losses to current replacement value in 1980 of 24.3 cents per $100. A current replacement value of $130,346,391,018 was reported for structures, equipment, contents and oil stocks in 1980.

Fire losses of $316,034,121 were reported for the year. The number of fires reported for 1980 totaled 366.

TABLE 1A

CURRENT REPLACEMENT VALUES, FIRE LOSSES, AND FIRE-LOSS RATIOS, BY CLASSES OF PROPERTY FOR 1980

Classes of Property	Current Replacement Value $	Fire Loss $	Fire-Loss Ratio $/$100
Exploration, Production & Gas Processing	64,074,144,284	8,037,647	0.013
Refining	28,570,892,480	187,801,592	0.657
Marketing	11,258,471,422	11,498,996	0.102
Pipeline	12,763,036,612	960,470	0.008
Chemical Operations	9,699,275,459	106,832,000	1.101
Miscellaneous	3,980,570,761	903,416	0.023
All Properties	130,346,391,018	316,034,121	0.243

NOTES: The reporting of fires for 1980 was restricted to those resulting in losses of $2,500 or more.

[1]The substantial revisions to this table resulted from the resubmission of one company to its initial questionnaire after the 1980 Report had been published. An errata sheet to the original "Reported Fire Losses in the Petroleum Industry—1980" reflecting these revisions was published on January 18, 1982.

TABLE 2
NUMBER OF FIRES REPORTED FOR 1981 AND 1980

Class of Property	Year	Originating on Oil-Company Properties: Confined to Property	Originating on Oil-Company Properties: Spread to Other Property	Originated Outside But Spread to Oil-Company Property	No. $2,500 to $100,000 Loss	No. $100,000 to $1,000,000 Loss	No. over $1,000,000 Loss	Total Number of Fires
Exploration, Production & Gas Processing	1981	147	0	3	124	22	4	150
	1980	94	0	2	84	11	1	96
Refining	1981	144	0	0	100	36	8	144
	1980	140	0	0	92	37	11	140
Marketing	1981	85	0	7	86	6	0	92
	1980	69	3	0	67	4	1	72
Pipeline	1981	16	1	0	11	6	0	17
	1980	9	0	0	5	4	0	9
Chemical Operations	1981	56	0	2	49	8	1	58
	1980	17	0	0	10	5	2	17
Miscellaneous	1981	14	0	0	13	1	0	14
	1980	32	0	0	28	4	0	32
All Properties	1981	462	1	12	383	79	13	475
	1980	361	3	2	286	65	15	366

NOTE: The reporting of fires for 1981 was restricted to those resulting in losses of $2,500 or more.

TANK FIRE EXPERIENCE IN 1981

Sixteen companies responded to a questionnaire requesting information on fires originating in tanks, resulting in losses of $2,500 or more per fire. Reports on such fires in 1981 are summarized in Table 3. A total of 45 fires in this category were reported for 1981. These fires involved 49 tanks.

Of the tanks affected in 1981, 23 stored crude oil.

By type of tank involved in fires, 29 had cone roofs, and 3 were of the dome roof type.

Of a total of 49 tanks involved, 24 were located on producing properties, 12 at refineries, 3 in pipeline operations, and 6 at bulk plants and terminals.

TABLE 3

TANK FIRE EXPERIENCE IN 1981

Fires Originating in Tanks Resulting in Losses of $2,500 or More

	Number of Tanks Involved in Fires									
	Structural Type of Tank									
	Floating Roof									
	Pantograph Seal 1981	Tube Seal 1981	Covered 1981	Total 1981	Cone Roof 1981	Dome Roof 1981	Sphere & Spheroid 1981	Horizontal 1981	Other Types 1981	Total 1981
By Class of Product:										
Crude Oil	3	0	1	4	16	2	0	0	1	23
Products:										
Under 100 F Flash	3	0	4	7	5	0	1	0	2	15
100–200 F Flash	0	0	1	1	2	0	0	0	0	3
Over 200 F Flash	0	0	1	1	1	0	0	0	0	2
LPG	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	5	1	0	0	0	6
Total	6	0	7	13	29	3	1	0	3	49
By Location:										
Producing Properties	0	0	0	0	19	3	0	0	2	24
Pipeline Operations	2	0	0	2	1	0	0	0	0	3
Refineries	2	0	6	8	3	0	1	0	0	12
Bulk Plants & Terminals	2	0	1	3	3	0	0	0	0	6
Other Locations	0	0	0	0	3	0	0	0	1	4
Total	6	0	7	13	29	3	1	0	3	49
Total Number of Fires Involving Tanks (regardless of number of tanks involved)										45

NOTE: The reporting of tank fires for 1981 was restricted to those resulting in losses of $2,500 or more. Not comparable to 1980.

TANK FIRE EXPERIENCE IN 1980

Eleven companies responded to a questionnaire requesting information on fires originating in tanks, resulting in losses of $1,000 or more per fire. Reports on such fires in 1980 are summarized in Table 3. A total of 36 fires in this category were reported for 1980. These fires involved 46 tanks.

Of the tanks affected in 1980, 26 stored crude oil.

By type of tank involved in fires, 23 had cone roofs, and 4 were of the dome roof type.

Of a total of 46 tanks involved, 30 were located on producing properties, 11 at refineries, none in pipeline operations, and 3 at bulk plants and terminals.

TABLE 3

TANK FIRE EXPERIENCE IN 1980

Fires Originating in Tanks Resulting in Losses of $1,000 or More

	Number of Tanks Involved in Fires									
	Structural Type of Tank									
	Floating Roof									
	Pantograph Seal 1980	Tube Seal 1980	Covered 1980	Total 1980	Cone Roof 1980	Dome Roof 1980	Sphere & Spheroid 1980	Horizontal 1980	Other Types 1980	Total 1980
By Class of Product:										
Crude Oil	0	0	0	0	13	2	0	6	5	26
Products:										
Under 100 F Flash	3	2	1	6	1	1	0	0	0	8
100–200 F Flash	0	0	0	0	4	0	0	1	0	5
Over 200 F Flash	0	0	0	0	3	0	0	0	0	3
LPG	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	2	1	0	0	1	4
Total	3	2	1	6	23	4	0	7	6	46
By Location:										
Producing Properties	0	0	0	0	15	3	0	6	6	30
Pipeline Operations	0	0	0	0	0	0	0	0	0	0
Refineries	0	2	0	2	8	1	0	0	0	11
Bulk Plants & Terminals	3	0	0	3	0	0	0	0	0	3
Other Locations	0	0	1	1	0	0	0	1	0	2
Total	3	2	1	6	23	4	0	7	6	46
Total Number of Fires Involving Tanks (regardless of number of tanks involved)										36

NOTE: The reporting of tank fires for 1980 was restricted to those resulting in losses of $1,000 or more. Not comparable to 1981.

COMPANIES PARTICIPATING IN THE 1981 SURVEY

Ada Oil Exploration Corporation
Amarex, Inc.
American Petrofina Co. of Texas
Anderson Petroleum, Inc.
Arcadia Refining Company
Argo Petroleum Corporation
Armour Properties
Ashland Oil, Inc.
Atlantic Richfield Company
Belcher Company of New York, Inc.
Bow Valley Petroleum Inc.
BP North America Trading, Inc.
Celeron Corporation
Champlin Petroleum Company
Chase Transportation Company
Cheyenne Pipeline Company
Cities Service Company
Clark Oil & Refining Corp.
Colonial Pipeline Company
Colorado Interstate Gas Co.
Condor Operating Company
Conoco Inc.
Cross Oil & Refining Company
Dart Oil & Gas Corporation
Daylight Engineering Inc.
Dorchester Gas Corporation
Dorchester Refining Company
Eastland Oil Company
E.E. Fogelson
El Paso Natural Gas Company
El Paso Products Company
Eureka Pipe Line Company
Explorer Pipeline Company
Exxon Company, U.S.A.
Getty Oil Company
Gulf Oil Corporation
Goldking Production Company
Hellman Estate
H.L. Brown
Home Petroleum Corporation
Hudson Refining Company, Inc.
Huskey Oil Company
J.D. Street & Company, Inc.
J-O'B Operating Company
J.S. Abercrombie Mineral Company
Kaneb Pipe Line Company
Kansas-Nebraska Natural Gas Co., Inc.
Kentucky Hydrocarbon Company
Koch Refining Company
Laurel Pipe Line Company
Lone Star Gas Company
Louisiana Land and Exploration Company
MAPCO Inc.
Marathon Oil Company
Meenan Oil Co., Inc.
MGPC, Inc.
Mississippi River Transmission Corp.
Mitchell Energy & Development Corp.
Mobil Oil Corporation
Modular, Inc.
Monsanto Oil Company
Murphy Oil Company
National Helium Corporation
Northeast Petroleum Industries, Inc.
Parade Company
Peoples Natural Gas Company
Petrolane-Lomita Gasoline Company
Phillips Petroleum Company
Plantation Pipe Line Company
Pride Refining, Inc.
Quitman Refining Company
Rocket Oil Company
Santa Fe Pipeline Company
Sinclair Oil Corporation
Southern Union Refining Company
Southern Pacific Pipe Lines, Inc.
Standard Oil Company (Ohio)
Standard Oil of California
Sun Company, Inc.
Tenneco Oil Company
Texaco Inc.
Texas Oil and Chemical Company
Tosco Corporation
Union Oil Company of California
Westland Oil Development Corporation
West Shore Pipe Line Company
Williams Pipe Line Company
Winston Refining Company
Wyatt, Incorporated

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Reported Fire Losses In The Petroleum Industry For 1982

Statistics Department

JUNE 1983

American
Petroleum
Institute

REPORTED FIRE LOSSES IN THE PETROLEUM INDUSTRY—1982

The experience record of 131 companies reporting to the 53rd annual fire loss survey to the American Petroleum Institute indicates a ratio of fire losses to current replacement value in 1982 of 3.1 cents per $100. A current replacement value of $271,170,766,508 was reported for structures, equipment, contents and oil stocks in 1982.

Fire losses of $84,457,177 were reported for the year. The number of fires reported for 1982 totaled 512.

TABLE 1

CURRENT REPLACEMENT VALUES, FIRE LOSSES, AND FIRE-LOSS RATIOS, BY CLASSES OF PROPERTY FOR 1982

Classes of Property	Current Replacement Value $	Fire Loss $	Fire-Loss Ratio $/$100
Exploration, Production & Gas Processing	127,034,101,030	21,279,588	0.017
Refining	53,347,494,667	45,149,604	0.085
Marketing	19,254,774,628	2,292,671	0.012
Pipeline	42,496,297,448	1,233,216	0.003
Chemical Operations	23,945,783,001	14,154,136	0.059
Miscellaneous	5,092,315,734	347,962	0.007
All Properties	271,170,766,508	84,457,177	0.031

NOTES: The reporting of fires for 1982 was restricted to those resulting in losses of $2,500 or more.

A list of the companies participating in the survey for 1982 appears on page 4.

TABLE 2
NUMBER OF FIRES REPORTED FOR 1982 AND 1981

Class of Property	Year	Originating on Oil-Company Properties: Confined to Property	Originating on Oil-Company Properties: Spread to Other Property	Originated Outside But Spread to Oil-Company Property	No. $2,500 to $100,000 Loss	No. $100,000 to $1,000,00 Loss	No. over $1,000,000 Loss	Total Number of Fires
Exploration, Production & Gas Processing	1982	163	0	7	143	23	4	170
	1981	147	0	3	124	22	4	150
Refining	1982	201	0	0	148	45	8	201
	1981	144	0	0	100	36	8	144
Marketing	1982	58	0	1	51	8	0	59
	1981	85	0	7	86	6	0	92
Pipeline	1982	8	1	0	7	2	0	9
	1981	16	1	0	11	6	0	17
Chemical Operations	1982	61	0	0	54	6	1	61
	1981	56	0	2	49	8	1	58
Miscellaneous	1982	11	0	1	11	1	0	12
	1981	14	0	0	13	1	0	14
All Properties	1982	502	1	9	414	85	13	512
	1981	462	1	12	383	79	13	475

NOTE: The reporting of fires for 1982 was restricted to those resulting in losses of $2,500 or more.

TANK FIRE EXPERIENCE IN 1982

Twenty-one companies responded to a questionnaire requesting information on fires originating in tanks, resulting in losses of $2,500 or more per fire. Reports on such fires in 1982 are summarized in Table 3. A total of 66 fires in this category were reported for 1982. These fires involved 78 tanks.

Of the tanks affected in 1982, 43 stored crude oil.

By type of tank involved in fires, 44 had cone roofs, and 4 were of the dome roof type.

Of a total of 78 tanks involved, 51 were located on producing properties, 18 at refineries, 3 in pipeline operations, and 4 at bulk plants and terminals.

TABLE 3

TANK FIRE EXPERIENCE IN 1982

Fires Originating in Tanks Resulting in Losses of $2,500 or More

Number of Tanks Involved in Fires

Structural Type of Tank

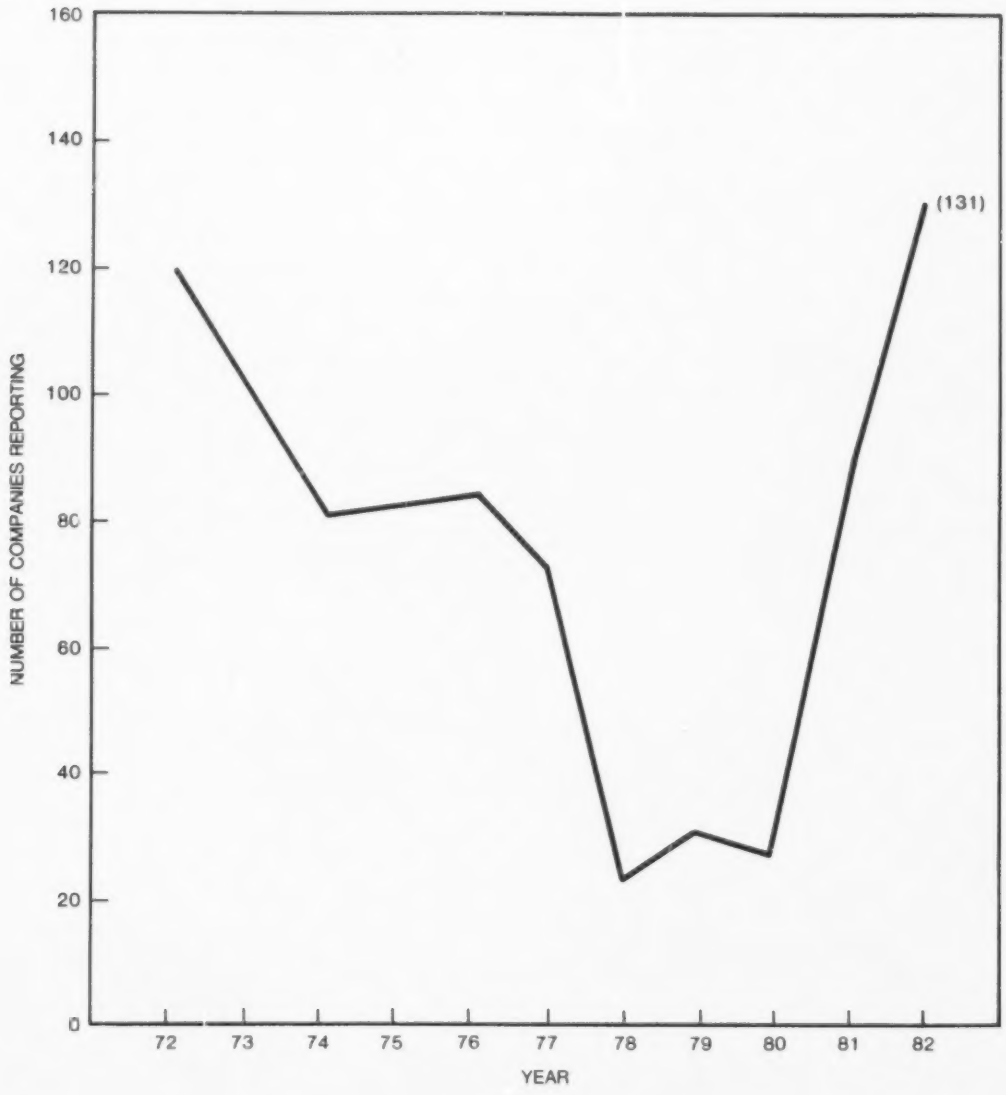
	Floating Roof																			
	Pantograph Seal		Tube Seal		Covered		Total		Cone Roof		Dome Roof		Sphere & Spheroid		Horizontal		Other Types		Total	
	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981
By Class of Product:																				
Crude Oil	2	3	0	0	1	1	3	4	22	16	2	2	0	0	10	0	6	1	43	23
Products:																				
Under 100 F Flash	1	3	2	0	3	4	6	7	4	5	0	0	1	1	0	0	0	2	11	15
100–200 F Flash	0	0	0	0	0	1	0	1	8	2	2	0	0	0	0	0	0	0	10	3
Over 200 F Flash	0	0	0	0	0	1	0	1	5	1	0	0	0	0	0	0	2	0	7	2
LPG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	5	5	0	1	0	0	0	0	2	0	7	6
Total	3	6	2	0	4	7	9	13	44	29	4	3	1	1	10	0	10	3	78	49
By Location:																				
Producing Properties	0	0	0	0	0	0	0	0	33	19	1	3	0	0	10	0	7	2	51	24
Pipeline Operations	0	2	0	0	0	0	0	2	2	1	1	0	0	0	0	0	0	0	3	3
Refineries	3	2	1	0	2	6	6	8	9	3	0	0	1	1	0	0	2	0	18	12
Bulk Plants & Terminals	0	2	1	0	2	1	3	3	0	3	0	0	0	0	0	0	1	0	4	6
Other Locations	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	1	2	4
Total	3	6	2	0	4	7	9	13	44	29	4	3	1	1	10	0	10	3	78	49

Total Number of Fires Involving Tanks (regardless of number of tanks involved) 66 45

COMPANIES PARTICIPATING IN THE 1982 SURVEY

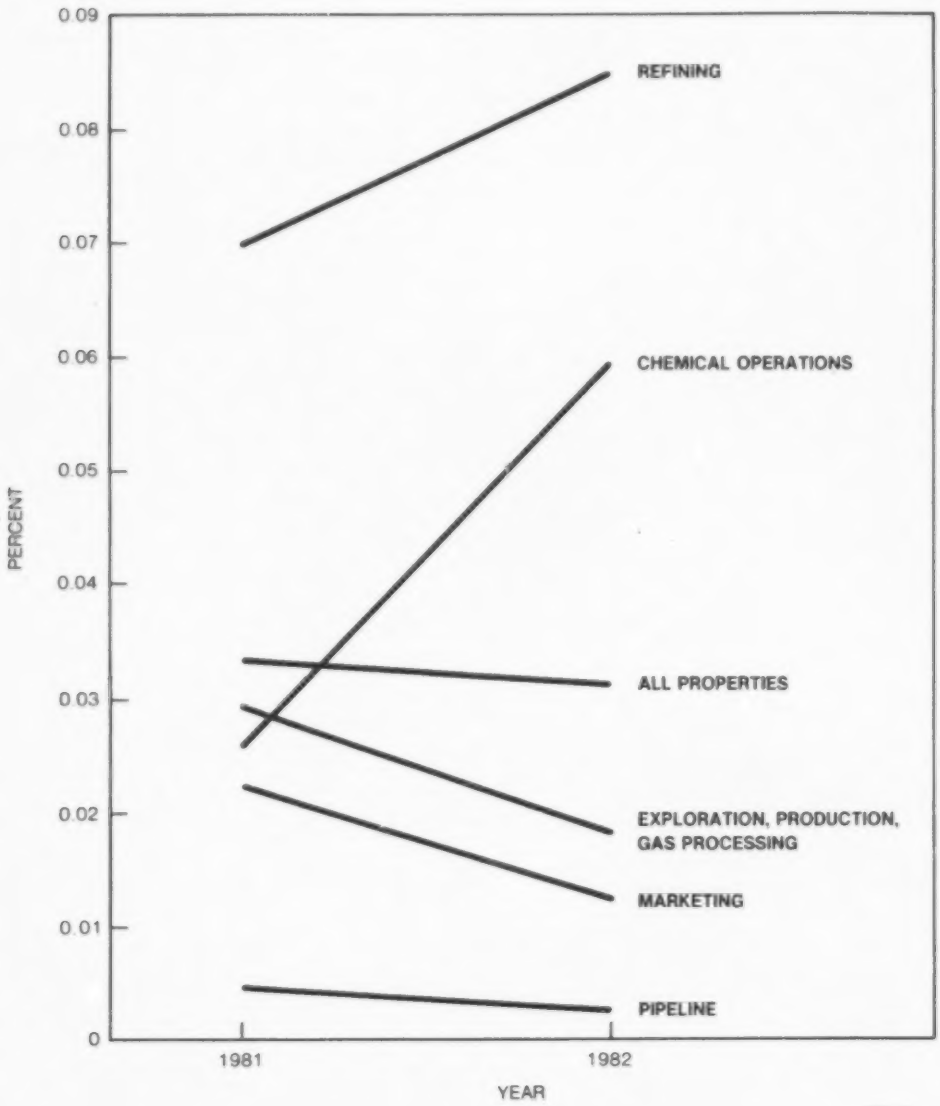
Ada Oil Exploration Corporation
Alyeska Pipeline Service Company
Amarex, Inc.
Amber Refining Company
Anderson Petroleum, Inc.
Arcadia Refining Company
Argo Petroleum Corporation
Armour Properties
Asamera Oil (U.S.) Inc.
Ashland Oil, Inc.
Atlantic Richfield Company
Belcher Company of New York, Inc., The
Bow Valley Petroleum Inc.
Breckenridge Gasoline Company
Cabot Corporation
CELERON Oil & Gas Company
Champlin Petroleum Company
Charter International Oil Company
Chase Transportation Company
Cheyenne Pipeline Company
Clark Oil & Refining Corporation
Colonial Pipeline Company
Colorado Interstate Gas Company
Columbia LNG
Condor Operating Company
Conoco Inc.
Cook Inlet Pipe Line Company
Cross Oil & Refining Company
Dart Oil & Gas Corporation
Daylight-Wiser Gas Processing
Derby Refining Company
D.J. Witman Company
Dorchester Gas Corporation
Eastland Oil Company
Eddy Refining Company
E.E. Fogelson
El Paso Natural Gas Company
El Paso Products Company
Eureka Pipe Line Company, The
Explorer Pipeline Company
Exxon Chemical Americas
Exxon Company, U.S.A.
Getty Oil Company
Goldking Production Company
Gulf Oil Corporation
Hellman Estate
Hewit & Dougherty
H.L. Brown, Jr.
Home Petroleum Corporation
Hudson Refining Company, Inc.
Hunt Oil Company
Husky Oil Company
J.D. Street & Company, Inc.
J.S. Abercrombie Mineral Co., Inc.
Kaneb Pipe Line Company
Kansas-Nebraska Natural Gas Co., Inc.
Kentucky Hydrocarbon Company
Kerr-McGee Refining Corporation
Koch Industries, Inc.
Lakehead Pipe Line Company
Lario Oil & Gas Company
Laurel Pipe Line Company
Lone Star Gas Company
Louisiana Land & Exploration Co., The
MAPCO Inc.
Marathon Oil Company
Marion Corporation
Meenan Oil Co., Inc.
MGPC, Inc.
Mississippi River Transmission Corporation
Mitchell Energy & Development Corporation
Mobil Oil Corporation
Modular, Inc.
Monsanto Oil Company
Murphy Oil Corporation
National Helium Corporation
Newell Oil Company, Inc.
Northeast Petroleum Industries, Inc.

Northwest Exploration Company
Ohio Oil Gathering Corporation
Oklahoma Refining Company
ONEOK Inc.
Pacific Refining
Parade Company
Pennzoil Company
Peoples Natural Gas Company
Petrolane Lomita Gasoline Company
Phillips Petroleum Company
Plantation Pipe Line Company
Placid Oil Company
Plateau, Inc.
Portal Pipe Line Company
Pride Refining Inc.
Quaker State Oil Refining Corporation
Quitman Refining Company
Rocket Oil Company
Saber Refining Company
Santa Fe Energy Company
Santa Fe Pipeline Company
Sentry Refining, Inc.
Sergeant Oil & Gas Company, Inc.
Sinclair Oil Corporation
Snyder Exploration Company
Somerset Refinery, Inc., The
Southern Natural Gas Company
Southern Pacific Pipe Lines, Inc.
Southern Union Refining Company
Southland Oil Company
Standard Oil Company of California
Standard Oil Company (Indiana)
Steuart Petroleum Company
Sun Company, Inc.
Tenneco Oil Company
Tesoro Petroleum Corporation
Texaco Inc.
Texas Eastern Transmission Corporation
Texas Oil and Chemical Company
Thriftway Company
Total Petroleum (North America) Ltd
Tosco Corporation
Union Oil Company of California
United Energy Resources, Inc.
United Refining Company
U.S. Industrial Chemicals Company
Westland Oil Development Corporation
West Shore Pipe Line Company
Williams Pipe Line Company
Witco Chemical Corporation
Wyatt Incorporated



Company Participation in API Fire Data Collection

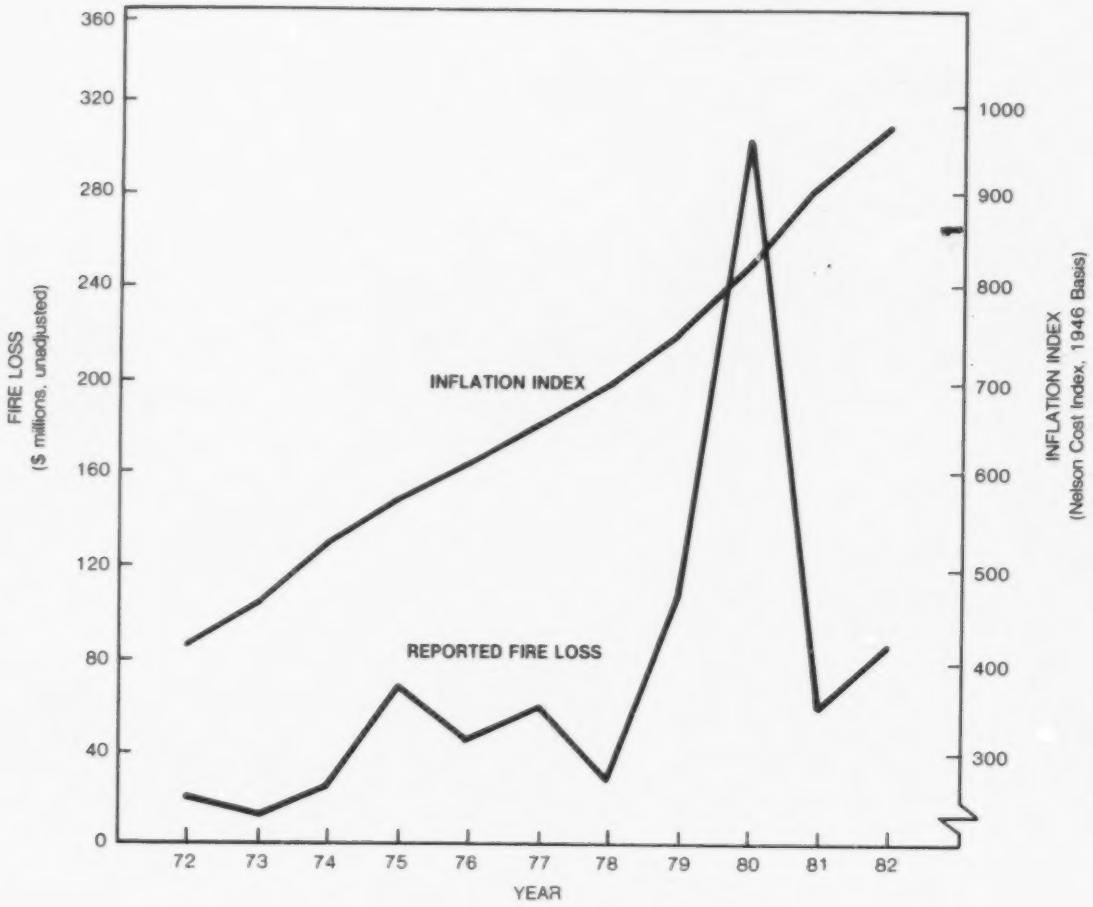
NOTE: To facilitate comparisons, the scale for this curve is the same as that used for the participation curves in the other three fire and safety reports.



Fire Loss as a Percent of Replacement Value

NOTE: Replacement value started being used in 1980. However, API sample sizes for 1980 were small because of low participation. Therefore, only the latest two years are plotted.

The left scale is in percent. All loss ratios were less than one-tenth of one percent during these two years.

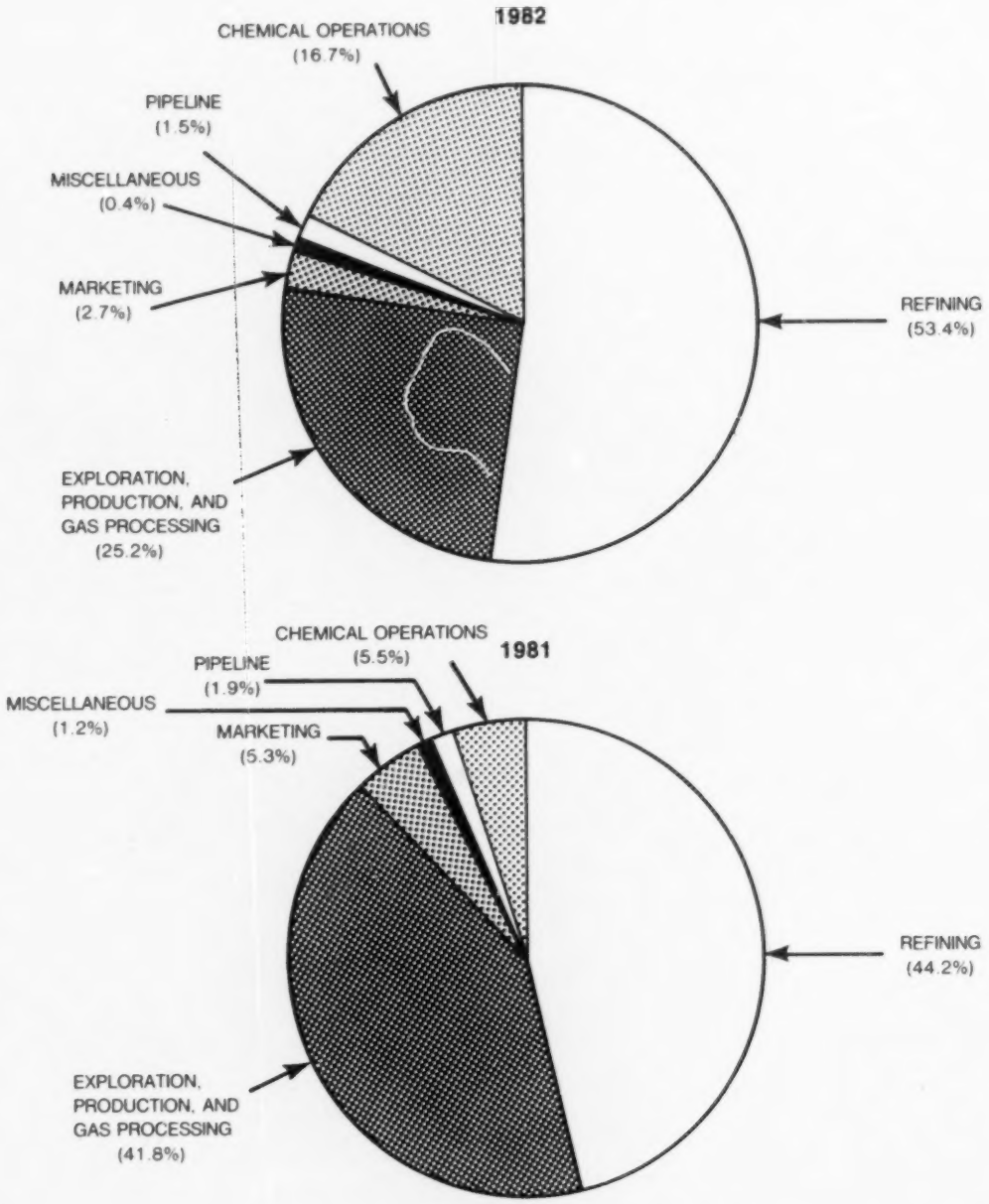


Reported Fire Loss, All Properties

NOTES: These are the raw (unadjusted) sums of data from reporting companies and are not scaled to industry totals. Because company participation varied over this period, the data should be used with caution.

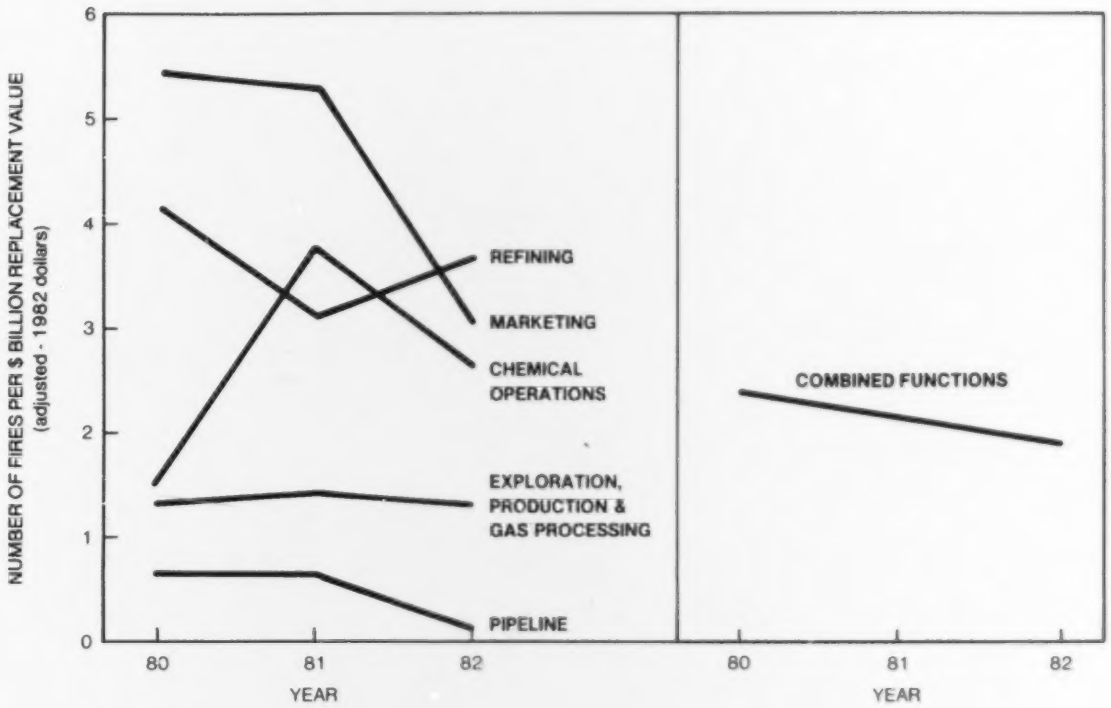
The peak in 1980 is partly attributable to two reported fires which accounted for $52 million, according to Marsh & McLennan Protection Consultants' tabulation of large fires for that year.

Although the threshold for reporting fires to API changed from $1000 to $2500 in 1980, this has little effect on the data. A relatively small part of the dollar loss is for fires between $1000 and $2500. Many companies reported only the larger fires, and $1000 in 1972 was approximately equivalent to $2500 in 1982.



Percentage Fire Loss by Function

NOTE: The percentages are based on the total fire loss reported to API.



Fires per Billion Dollars Replacement Value

NOTES: Some companies do not report fires to API that are under their own reporting threshold that is higher than $2500 (e.g., $50,000)

1980 is the year when replacement value started being used (in place of net book value).

Figures are adjusted for inflation using the Nelson Cost Index.

1-2300 — 8/82 — 3C
1-2300 — 7/83 — 4C